Name: Date: Period:

**Alg. 1 3.1-5 Creating and Solving Equations**

In this activity, you will choose five of the following problems to demonstrate your understanding of the standards CED.1 and REI.1. SEE PAGE 2 FOR GRADING RUBRIC!!!!

**AT LEAST ONE problem chosen must be from # 1, 2, 6 or 11**.

For each problem,

* Identify the variable.
* Translate your relationship into an equation.
* Describe each step used to solve for the variable by using properties of equality.
  + Addition property of equality
  + Subtraction property of equality
  + Multiplication property of equality
  + Division property of equality
* Describe the answer algebraically and with a sentence and explain why the answer makes sense.

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| ***EXAMPLE*** | | |
| #12 | *Two-thirds of a number minus six is -10. What is the number?* | |
| Steps | Show Algebraic Work | Descriptions/Explanations |
| Identify Variable | X=the number | My unknown in this problem is the number. |
| Translate | (2/3)x – 6 = -10 |  |
| Describe Steps for Solving | (2/3)x – 6 = -10  -6 -6  (2/3)x = -16  (2/3) (2/3)  X = -24 | * I start by using the subtraction property of equality to subtract 6 from both sides. * Then I use the division property of equality to divide both sides by (2/3). |
| Describe Answer and Explain Why It Makes Sense | X = -24 | * The unknown number is -24. This makes sense because (2/3) times -24 is -16 and -16 = -16. |

**Questions to Choose From**

1. **Darius is training to prepare for wrestling season. He weighs 155 pounds now. He wants to gain weight so that he starts the season weighing 160 pounds. How much weight should he gain to reach his goal?**
2. **The average time it takes to manufacture a car in the United States is equal to the average time it takes to manufacture a car in Japan plus 8.1 hours. The average time it takes to manufacture a car in the United States is 24.9 hours. What is the average time to manufacture a car in Japan?**
3. A number increased by -37 is -91. Find the number.
4. What number minus one-half is equal to negative three-fourths?
5. Seven times a number equals -84. What is the number?
6. **Research conducted by a daily U.S. newspaper has shown that about one seventh of the people in the world are left-handed. About how many left-handed people are there in a group of 350?**
7. Two times a number *t* decreased by eight equals seventy.
8. What number divided by two equals -18?
9. Twenty-nine is thirteen added to four times a number. What is the number?
10. Find three consecutive odd integers whose sum is 51.
11. **Hugo withdrew some money from his bank account. He spent one third of the money for gasoline. Then he spent half of what was left for a haircut. He bought lunch for $6.55. When he got home, he had $13.45 left. How much did he withdraw from his bank?**

**Alg. 1 3.1-5 Creating and Solving Equations**

**Grading Rubric**

|  |  |
| --- | --- |
| **CED.1** | **Create equations and inequalities in one variable and use them to solve problems.** |
| **4** | Can consistently and thoroughly   * Model a real-world problem with an equation * Use the equation to solve the problem   With no errors |
| **3** | Can usually   * Model a real-world problem with an equation * Use the equation to solve the problem   With minor errors |
| **2** | Can inconsistently   * Model a real-world problem with an equation * Use the equation or inequality to solve the problem   Or requires some assistance |
| **1** | Can minimally   * Model a real-world problem with an equation or inequality * Use the equation to solve the problem   Or requires considerable assistance |
| **REI.1** | **Explain each step in solving a simple equation as following from the equality of numbers asserted at the previous step, starting from the assumption that the original equation has a solution. Construct a viable argument to justify a solution method.** |
| **4** | Can consistently and thoroughly   * Explain each step in solving simple equations from the equality of numbers asserted at the previous step * Construct a viable argument to justify a solution method   With no errors |
| **3** | Can usually   * Explain each step in solving simple equations from the equality of numbers asserted at the previous step * Construct a viable argument to justify a solution method   With minor errors |
| **2** | Can accurately and usually   * Explain most steps in solving simple equations * Construct a limited argument to justify a solution method   Or requires some assistance |
| **1** | Can minimally   * Explain most steps in solving simple equations * Construct a very limited argument to justify a solution method   Or requires considerable assistance |

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| #\_\_\_\_\_\_\_ | *INSERT QUESTION HERE* | |
| Steps | Show Algebraic Work | Descriptions/Explanations |
| Identify Variable |  |  |
| Translate |  |  |
| Describe Steps for Solving |  |  |
| Describe Answer and Explain Why It Makes Sense |  |  |

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